

Examination of Communication Delays on Team Performance: Utilizing the International Space Station (ISS) as a Test Bed for Analog Research

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Operational conjectures about space exploration missions of the future indicate that space crews will need to be more autonomous from mission control and operate independently. This is in part due to the expectation that communication quality between the ground and exploration crews will be more limited and delayed. Because of potential adverse effects on communication quality, both researchers and operational training and engineering experts have suggested that communication delays and the impact these delays have on the quality of communications to the crew will create performance decrements if crews are not given adequate training and tools to support more autonomous operations.

This presentation will provide an overview of a research study led by the Behavioral Health and Performance Element (BHP) of the NASA Human Research Program that examines the impact of implementing a communication delay on ISS on individual and team factors and outcomes, including performance and related perceptions of autonomy. The methodological design, data collection efforts, and initial results of this study to date will be discussed . The results will focus on completed missions, DRATS and NEEMO15. Lessons learned from implementing this study within analog environments will also be discussed. One lesson learned is that the complexities of garnishing a successful data collection campaign from these high fidelity analogs requires perseverance and a strong relationship with operational experts.

Results of this study will provide a preliminary understanding of the impact of communication delays on individual and team performance as well as an insight into how teams perform and interact in a space-like environment . This will help prepare for implementation of communication delay tests on the ISS, targeted for Increment 35/36.